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(54) Title: A METHOD AND SYSTEM FOR HANDLING MULTI-PART MESSAGES BY USERS OF CELLULAR PHONES

(57) Abstract: A system and method for enabling mobile handset users to create and manage messages composed of both text and multimedia attachments, and communicate these messages to other mobile handset users using existing handsets and wireless architecture. According to the present invention, SMS messages together with voice attachments, or other type of attachments, are composed, communicated, monitored and managed. These attachments may be, for example, bit-map icons, vocal tones, audio and video clips, business card information and any other data attachments. Through this attachment method, a multi-part message (MPM) is created.

A METHOD AND SYSTEM FOR HANDLING MULTI-PART MESSAGES BY USERS OF CELLULAR PHONES

FIELD AND BACKGROUND OF THE INVENTION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to wireless communicators and, in particular, to a system for handling voice plus data messages by users of cellular phones.

2. Description of the Related Art

Mobile telephone usage for conventional voice communication has expanded rapidly. In recent years there has also been a significant increase in data communication over wireless channels. The need for systems to facilitate the usage and management of voice and text using wireless communication devices has led to various new developments in the wireless communications market. Currently available technologies enabling the transfer of text over mobile phones are generally associated with the Short Messaging Service (hereinafter "SMS"), while technologies enabling the management of voice messages over mobile phones are generally associated with voicemail.

SMS technology allows SMS-enabled cellular phones (mostly in digital cellular networks, such as GSM, CDMA and TDMA) to transfer short textual messages (the exact length depends on the type of network, but is typically between 100 up to 256 characters) between two parties. SMS allows the creation of text messages either on mobile handsets or by computer systems, and receiving of such text messages on mobile handsets. Recent technologies allow the transfer of images (icons) along with SMS Messages. However, these technologies are being designed for wireless broadband transmission. In the definition of such wireless standards, referred to as 3G (third generation) mobile telephony technology, there are available features, which enable the transfer of audio and video clips as attachments to messages, which are exchanged between mobile handsets. These 3G technologies are not available when using current handsets and wireless architectures, and require costly hardware upgrades in both provider and client systems

and devices. Such future technologies include Universal Mobile Telecommunications System (UMTS) and Wideband-CDMA (CDMA 2000).

Voicemail technology allows the depositing of voice messages in a user's voicemail box, so that the user may later access that box, usually by using technologies such as Interactive Voice Response (hereinafter "IVR") systems, to retrieve the messages. The disadvantages of this method are that the receiving user must be registered to a voicemail service, and must actively monitor and manage the voicemail in order to efficiently utilize its services. SMS notification for voicemail messages is commonplace today, wherein the user is notified by a SMS message when a new voicemail has been deposited in his or her voice-mailbox. However, the integration between SMS and voicemail is not tight, since after receiving the SMS notification, the user is still required to log on to the voicemail system in order to obtain the new message. In most cases the user needs to navigate through cumbersome voice menus for the retrieval of the desired message. Furthermore, it is generally not possible to browse visually through the stored messages in order to locate a certain message. It is also not currently possible to attach relevant text (such as web addresses, phone numbers etc.) to a voice message, which may, for example, enable the receiver to automatically receive contact information or other content. Therefore it is necessary for a receiver of a voicemail to listen to the playback of a message in order to attain relevant contact data of a message sender, and then transcribe the relevant data into the required typed form for future use.

The basic capabilities of the cellular phones utilized in the current networks include voice communications; Short-Message-Services (SMS); SIM Toolkit capabilities (hereinafter "STK"), as defined in the GSM standards; and Wireless Application Protocol (WAP) support (riding over a circuit switched data channels) which also includes the ability to handle Wireless Markup Language (WML) directives with a WML browser application running on the cellular-phone, or an equivalent directive, like Handheld Device Markup Language (HDML), with a HDML browser running on the cellular-phone. The above-mentioned STK, WML-browser and HDML-browser are facilitators for creating user-friendly user-interfaces on cellular-phones. However, these user-interface tools do not currently support integrated data and voice messaging systems.

There is thus a widely recognized need for, and it would be highly advantageous to have, a system that can provide a user-friendly method for enabling the integration of voice and data communications on currently available wireless handsets utilizing current communication technologies from mobile communication providers.

SUMMARY OF THE INVENTION

According to the present invention there is provided a system and method for enabling mobile handset users to create and manage messages composed of both text and multimedia attachments, and communicate these messages to other mobile handset users. Such communications are enabled using existing handsets (handsets with SMS capabilities, or with SIM Toolkit capabilities) and current digital cellular network architecture (such as GSM). The present invention requires only the addition of a mechanism (box) to some part of a wireless network in order to enable the various functions, and does not require infrastructure changes such as upgrading networks to GPRS/EDGE or UMTS/CDMA2000, which are future infrastructures. Likewise, the present invention does not require the upgrading of handsets to future technologies such as WAP/JAVA/packet switch enabled future phones. According to the present invention, users may receive and access Multi-part Messages (messages composed of text and an attachment, hereinafter referred to as "MPMs") with either no additional client software (in the SMS only scenario, where a user can use a regular SMS enabled phone) or optionally with a STK addition (in the case with an STK enabled phone). In all cases, no additional client hardware is required, as are no additional subscriptions to application service providers. Users are simply prompted when messages arrive, and are guided, by the user interface of the device, to retrieve the text and the voice elements of the message, quickly and efficiently.

The present invention comprises a new operational concept using current cellular handsets, over second generation, otherwise known as 2G, digital cellular networks, which are limited to basic voice and data capabilities. This new concept requires special methods in order to be realized, as will be described below.

Below, when referring to SMS, we refer to any short textual message that can be composed, manipulated, sent and received by a cellular phone. The actual technical implementation may vary between different networks. For example, the functional concept of SMS may be realized using the GSM Short-Message standard as defined in: GSM standards (09.02 and 03.40), which are fully incorporated herein by reference, as if fully set forth herein, the TIA/EIA standards (for example, as specifies in the IS-41c standard - ANSI-41C and TIA/EIA IS-637 for CDMA TIA/EIA IS-136 for TDMA), which are fully incorporated herein by reference, as if fully set forth herein, WAP and WML based capabilities which can also enable exchange of short textual messages between cellular-phones, or using the GSM Unstructured Supplementary-Services Data (USSD) specification (GSM 02.90, 03.90, 04.90), which is fully incorporated herein by reference, as if fully set forth herein, over which it is also possible to exchange short textual messages between a cellular phone and a server.
Similarly, any future capability that will enable such functionality can also be used for executing the new operational concept of the present invention.

According to the present invention, a system and method is provided for sending and managing SMS messages together with voice attachments, or other type of attachments, such that these combined voice and data messages can be dynamically created or edited, or pre-generated and kept in a central repository of the system, which is the vehicle through which the concept is realized. These attachments may be, for example, one or more of bit-map icons, vocal tones, audio clips, video clips, business card information (including relevant details such as address, phone numbers, fax numbers, email addressees, instant messaging addresses, etc.) and any other data attachments. Through this attachment method, a multi-part message is created, which is transferred to users via existing technologies such as SMS, voice and WAP.

An additional embodiment of the present invention is of a method for enabling the usage of Multi-Part Voice Messages (hereinafter referred to as MPVM). MPVM is an implementation of MPM, which differs in that it does not include a text message. MPVM is an alternative platform for using voice messages.

In additional embodiment of the present invention enables MPMs and MPVMs to be simultaneously transmitted to a group or groups of recipients.

A further embodiment of the present invention is referred to as Post Call MPVM. This is an application, which is an alternative to voice mail, whereby after one subscriber calls a second subscriber, and the second subscriber is not available to answer the call, the caller is routed to the post call MPVM mechanism, from where it can be accessed and managed.

For the purpose of this disclosure the following terms shall have the meaning defined herein:

"Voice session" is a connection established between mobile phones and a system for the purpose of sending voice data, the period of which is from the first connection and until the disconnection.

"Voice part" or "voice message" refers to the voice part of a MPM message.

"Communication device", "mobile phone", "cellular phone" and/or "mobile handset" refer to means of wireless communications.

SIM Tool Kit (STK) is a software mechanism, existing in a SIM (Subscriber Identity Module) smart card, which may be programmed to display custom menus on the phone's readout. The STK also enables the programming of applications, to interact and operate with any GSM based mobile device that supports the generic standard STK Mechanism required by the application.

"Type A" devices refer to wireless telephonic devices or mobile phones that support WAP protocol version 1.1 or higher or, any equivalent protocol. In type A handsets, if a telephone number is included in a WML page, the phone does not allow initiation of a voice call to the specified number, using a short sequence of key presses, but rather requires typing the entire number in order to initiate a voice call.

"Type B" devices refer to wireless telephonic devices or mobile phones that support WAP protocol version 1.1 or higher or, any equivalent protocol, wherein, if a telephone number is included in a WML page, the phone allows initiation of a voice call to the specified number, using a short sequence of key presses, and without needing to type the entire number.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

FIGURE 1 is an illustration of the components of the present invention.

FIGURE 2 illustrates the depositing of MPMs using a SIM Toolkit enabled handset.

FIGURE 3 illustrates the retrieval of MPMs, using SIM Toolkit enabled handset as well as SMS enabled handset.

FIGURE 3a illustrates an alternative means of retrieving MPMs, using SMS enabled handset.

FIGURE 4 illustrates an alternative means of depositing MPMs, using SMS enabled handset.

FIGURE 5 illustrates the depositing of MPMs over WAP, on Type A handsets.

FIGURE 6 illustrates the depositing of MPMs over WAP, on Type B handsets.

FIGURE 7 illustrates an example of a user interface that the subscriber can see in MPM deposit and retrieval sessions, using a STK enabled handset, according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention relates to a system and method for enabling mobile handset users to create messages composed of text and/or multimedia attachments, such as combinations of text, voice, and image data. According to the present invention, these messages can be communicated to other mobile handset users using existing handsets and wireless architecture.

The following description is presented to enable one of ordinary skill in the art to make and use the invention as provided in the context of a particular application and its requirements. Various modifications to the preferred embodiment will be apparent to those with skill in the art, and the general principles defined herein may be applied to other embodiments. Therefore, the present invention is not intended to be limited to the particular embodiments shown and described, but is to be accorded the widest scope

consistent with the principles and novel features herein disclosed.

Specifically, the present invention can be used to send SMS messages together with voice attachments, or other type of attachments, such that these combined voice and data messages, referred to as multi-part messages (MPMs) can be dynamically created or edited, or pre-generated and kept in a central repository of the system, which is the vehicle through which the concept is realized. These attachments may include, for example, bit-map icons, vocal tones, audio clips, video clips, business card information (including relevant details such as address, phone numbers, fax numbers, email addressees, instant messaging addresses, etc.) and any other data attachments. A MPM can be, for example, an SMS combined with a voice message, or two SMS messages, or an SMS and a voice message and a business card, or an SMS and a business card and an icon, etc. Typically (but not always), there will be an SMS as the initial part of the multi-part message.

Although the creation or generation of the various parts of the message can optionally be made separately, the operational concept of the present invention is one of synchronization and combined delivery of all the parts of the multi-part message, so as to present them to the receiving user as one complete message, and subsequently handle the message as such.

Thus, when subscriber A sends a short message to subscriber B, subscriber A will also have the ability to add an attachment, for example, a voice message to the short-message. When subscriber B receives the short-message, he/she will also have the ability to listen to the attached voice message. The message received by Subscriber B in this example, is a multi-part message (MPM).

The principles and operation of a system and a method according to the present invention may be better understood with reference to the drawings and the accompanying description, it being understood that these drawings are given for illustrative purposes only and are not meant to be limiting, wherein:

Figure 1 illustrates the various components of the system **100**, according to the preferred embodiment of the present invention. As can be seen in figure 1, an end user uses a wireless communications device **110-1** for composing, sending and managing

multi-part messages (MPMs). There is likewise a second user, equipped with a second wireless communications device **110-2**, which is able to receive, process and respond to MPMs. The end user device **110** is a handset that is SMS or WAP enabled. Optionally the handset is SIM toolkit (STK) enabled for enabling customized functions and the design of customized displays and menus. Each device may compose, process and respond to messages according to its inherent resources (SMS enabled, -, STK etc.).

Voice messages (or alternative multimedia messages) are transferred from the mobile station **110-1** to a Mobile Switching Center (MSC) **120**, from where they are transferred via voice trunks, such as T1/E1, to a voice interface **151** of the system. This voice interface **151** enables the transfer of voice into and out of sub-system **150**, of the present invention, where it is further processed. Text messages are transferred from the mobile station **110** to a SMS Center (SMSC) **130**, USSD Gateway or WAP Gateway **140**, from where they are transferred, for example via TCP/IP channels, to a data interface **152** of the system. This data interface **152** enables the transfer of the data into and out of sub-system **150** of the present invention, where it is further processed. The Short-Message-Service-Center (SMSC) **130** connectivity is defined in GSM standards (e.g. GSM standard 03.39) and other publicly documented protocols (e.g. Short Message Peer to Peer (SMPP) Protocol from Logica/Aldiscon). The system, as described, may include a fixed or wireless telephone network, including voice and data links from the handsets (fixed line or wireless) to various communications networks, for connecting subscribers using fixed and/or wireless communications devices.

The present invention enables the creation and transfer of multi-part messages (MPM), which are a combination of text (SMS) and other multimedia (such as voice, images etc.) content. The text for such a MPM may be an integral part of the message, or a simple text provided by the system to inform the recipient or describe the message etc. There may, for example, be a MPM that is comprised of 2 images and a voice file. Such a MPM will usually be accompanied with a minimal, system generated text describing the various components (attachments). The components of sub-system **150** of the present invention are as follows:

I. A voice interface **151** for enabling system interaction with a MSC; and

II. A data interface **152** for enabling system interaction with a mobile data gateway (generic expression for SMSC or WAP Gateway).

III. An application server **153**, with server software, for enabling communication of multi-part messages between the mechanism and mobile communications devices;

IV. A voice storage database **154** for storing voice messages (the actual voice files);

V. A main database **155** for storing all system, user, message, configuration and provisioning data (except the voice data).

VI. A local network **156** that facilitates connectivity between the Voice Interface **151**, Data Interface **152**, and Application Server **153** as well as between the storage devices **154**, **155** and Application server **153**.

The functioning of these components, and the relevant software that drives them will be described below:

Technical realization

Realization and utilization of MPMs is based on a sub system **150**, which is typically connected to the components of a wireless communications system (e.g. Mobile Switching Centers **120**, Short-Message-Service-Center **130**, WAP Gateway **140**) for voice and data connectivity. However, as long as data and voice links from the wireless communications device **110-1**, **110-2** are available, the system can also be located remotely.

System **100** of the present invention is operated through various software components, such that system **100** enables composition, management, storage and tracking of MPMs, which are composed by subscribers using communications devices. The core technology of the present invention is a software component, in the application server **153**, that coordinates the various components of the sub-system **150**. This component comprises means for optionally creating, managing, manipulating, monitoring and/or communicating multi-part messages. Application server **153** executes applications and services based on requests initiated by an incoming request. Requests can be received from either voice interface **151** or from data interface **152**. Voice Interface **151**, executes all the voice related activities and interfaces, includes line interface card such as E1/T1.

Data Interface **152**, executes all the data related activities and interfaces. Voice storage database **154**, is a high-speed storage device that handles all voice related storage activities. Data storage database **155**, is a standard storage device that contains all relevant information which is to be stored and retrieved on behalf of application server **153**. These include but are not limited to time transaction information, provisioning information, user data etc. Sub system **150** further includes local network **156**, which enables connectivity between voice interface **151**, data interface **152**, and application server **153**, as well as between storage devices (**154, 155**) and application server **153**. Sub system **150** communicates with mobile stations **110-1** and **110-2** through mobile switching center (MSC) **120** for voice transactions, and through short message service center (SMSC) **130** or through WAP gateway **140** for data transactions.

A person skilled in the art could easily design system **100** to support redundant configurations, such that in a case of a total or partial failure of a computing unit the operational load of such failed unit can be assumed by an alternative unit or units. Methods for such fail-over systems are well known in the industry. A person skilled in the art could also easily be able to implement system **100** in one or more forms of distributed configurations. This would typically be required in case of very large systems, having to serve large populations or expand over large geographical areas. System **100** architecture allows for various distribution schemes. The core technology facilitates MPM usage on a variety of devices, and requires adaptation to the needs of various devices, as will be described below. No software component is required on the client device (as long as the client device is SMS or WAP enabled). However in the case where the device has a STK, this toolkit offers additional features and may be configured accordingly, in order to offer such features.

The MPMs are composed according to various processes, as described in the scenarios below, using the user-interface capabilities inherent in various types of devices. MPMs are composed using the communications devices, and are sent to the system through the data and voice links that the system maintains with the cellular network. Composition and manipulation of messages are executed using interactive text menu's,

Interactive Voice Response (IVR), including Dual-Tone Multi-Frequency (DTMF) directives, and/or Speech to Text, depending on the network and device capabilities.

The data communication method with the cellular phone, according to the present invention, can be via SMS messages (for non-WAP cellular phones) and via WML directives sent over a cellular data link (for the WAP enabled phones). It is also possible to use alternate data protocols such as Compact HTML (CHTML) currently used by NTT DoCoMo's I-mode wireless system (http://www.nttdocomo.com/top.shtml). Other mark-up languages (for example, HTML, XML etc.) may be used for the data communication. In both cases the system also communicates with the wireless handset via the voice links in order to record or play voice. In the latter example, manipulation of the voice is carried out using in-band Dual-Tone MultiFrequency (DTMF) directives and/or Speech to Text.

Besides storing and tracking MPMs, the system also stores pre-generated items like audio clips, icons, pictures and business card information. The system communicates over the data and voice links with cellular-phones in order to process user requests regarding the manipulation of these pre-generated entities. These entities, which represent the elements of MPMs, are sent to the cellular-phone as lists of items. Transfer of icon and picture items (typically bitmaps) from the system to the cellular phone is carried out based on relevant protocols. For example, the transfer of bitmaps using SMS as a bearer, as currently available over some cellular phones. The possibility to view or manipulate certain items (such as pictures) depends on the capabilities of the cellular phone to display such items.

A clear example of how the system is used in alternative ways, can be seen with reference to **Figures 2-7**. The following notation is used in the following figures:

MS - Mobile Station
SMSC - Short Message Service Center
MSC - Mobile Switching Center
DI - Data Interface
VI - Voice Interface
VS - Voice Storage
AS - Application Server
DB - Database
WG - WAP Gateway
WS - Web server
MPM – A multi-part message, consisting of SMS + Voice/multimedia attachment.

SMS – Conventional SMS capability, without STK or alternative programming kits.
SIM – Subscriber Identity Module, which is a smart card that contains user account information.
STK – SIM toolkit, used for storing user data, processing data, and enabling construction of customized displays and menus on the cellular-phone.
WTA - WTA (Wireless Telephone Applications) is an application framework for telephony services, within the definition scope of WAP 1.2 (Wireless Application Protocol) and above. WTA standard includes WTA user-agent, which resides on a cellular- phone, which is WAP 1.2 compliant, and WTA server.

Notes for the following scenarios:

1. The division of DI, VI, AS, VS, DB is for convenience. It is not necessary to design the system in this exact way. For example, the DB and VS can be one. Also, the AS can be joined with the VI and DI.

2. The flows described are the minimal set of operations. It is possible to add, for example, the control of the voice record/play - by adding operations to stop, pause, fast forward, rewind, etc. This can be done during a call either by sending DTMFs from the phone or by sending SMS or USSD strings.

Figure 2 illustrates the depositing of MPMs using a SIM Toolkit enabled handset (the order of voice and text entry phases may be interchanged):

Steps, as can be seen in Figure 2:

21. Subscriber **110-1** (on his/her cellular-phone) enters a MPM by typing a short (text) message over the cellular phone Keypad, in a special STK based screen, just as he/she would type an SMS message. This submission from the sending device to SMSC **130** includes MPM text data. The STK-capable handset includes SIM toolkit functions, which is a software kit that enables the programming of the SIM card (a smart card with a processor and memory). This card can run programs based on hardware and software of the phone. The STK enables designers to program customized menus and functions for subscribers. Such STKs are provided by SIM card manufacturers (such as Schlumberger, Gemplus, Oberthur, G&D etc.). Additionally, the subscriber enters other information relevant to the sending of the SMS, like validity period, reply-options and the cellular number of a second subscriber to whom he/she wishes to send the message (optionally,

the message can be sent to the name of a distribution list containing more than one subscriber, as facilitated by the cellular phone distribution-list mechanism (sometimes referred to as "groups"), or through an external distribution list, kept on the system).

22. The text message is transferred from SMSC **130** to data interface **152.**

23. The text data is stored in the system main database **155,** via application server **153.**

24. In addition to entering the above information, there is an option to include an attachment, for example a voice attachment. If this option is chosen, a voice session is established between subscriber's cellular phone **110** and MSC **120,** which subsequently connects the voice session to voice interface **151** of system **100,** and the subscriber is prompted to record the voice message. In order to enable recording a voice message, the STK environment dials application server **153,** via MSC **120,** and voice interface **151** with a dialed number, which is a pre-defined number.

25. The voice message is recorded, and stored in voice database **154.** Optionally, the subscriber can review and/or change the voice message, over the voice session, using DTMF based directions.

Following this, the combined MPM message is sent by the system to subscriber B (or to the group of subscribers), as will be described below.

It should be noted that, similarly to the above scenario, in addition to the voice attachment (or instead of it), it is possible to attach multiple attachments, as well as other types of attachments to the SMS message, such as pre-generated business card information, pre-generated voice-clips, icons or pictures etc. These items can be entered into the system in the following three ways: choosing them from or creating them directly on the handset, which requires it to be enabled for this type of media (e.g. video camera, keypad); selecting from predefined libraries on the system server, by browsing through title menus; and selecting from general Internet/Intranet content/data by specifying URL locations of files. The pre-generated attachments are kept in the system database, in some other system or on the Internet. In order to select one of these pre-generated files as an attachment, the subscriber can request to view a list of the above items, and select one or more of the items. The item will subsequently be attached to the MPM.

Figure 3 illustrates the retrieval of MPMs, using SIM Toolkit enabled handset, as follows:

A subscriber receives a MPM message, by first receiving the SMS part, and can read and manipulate it just like a regular SMS.

31. Application server **153** obtains the MPM text data from main database **155.**

32. Application server **153** sends SMS-based MPM data to handset of subscriber B **110-2,** via data interface **152** and SMSC **130.** The MPM data contains a text message and an internal (database) reference denoting the voice part of the MPM.

33. The MPM data part is presented on mobile station **110-2.** When reading the message, the subscriber also may request to hear the attached voice message, through choosing the relevant menu option.

34. The STK software dials into the system **100,** via MSC **120** and VI **151,** to enable listening to the voice message. The dialed number contains the voice message reference.

35. Voice interface **151** requests the MPM voice file from the voice database **154,** according to the reference.

36. Voice interface **151** obtains the MPM voice file from the voice database **154.**

37. Voice interface **151** plays the voice file to subscriber B **110-2** through MSC **120.** When hearing the voice message, the subscriber can also manipulate the message (e.g. back, fast-forward, etc.) using DTMF based directions.

After browsing the MPM, the subscriber can further manipulate the MPM through options like: save, delete, reply to subscriber A, transfer to another subscriber (or group of subscribers), with an option to also append his/her own MPM (the appending is done just like the composition of a new MPM).

At any particular time, subscriber B can have a plurality of MPMs in the inbox of his/her handset, and can re-browse them, and their attachments.

It should be noted that, through the above scenario, it is also possible to browse other types of attachments to the MPM, such as pre-generated business card information, pre-generated voice-clips, Icons or pictures. The possibility to browse items (such as pictures) may depend on the capabilities of the cellular phone to display such items.

Figure 3 also illustrates an alternative means of retrieving MPMs, by using SMS enabled handsets, as follows:

A subscriber receives a MPM message, by first receiving the SMS part, and can read and manipulate it just like a regular SMS.

31. Application server **153** obtains MPM text data from the main database **155.**

32. Application server **153** sends SMS-based MPM data to the handset of subscriber B **110-2**, via SMSC **130** and data interface **152**. The MPM data contains a text message and an internal (database) reference denoting the voice part of the MPM.

33. The MPM data part (i.e. the regular SMS) is presented on the mobile station. At the end of the message there is a textual suffix, like "please dial *5544nnn to hear voice attachment" (where nnn is an ordinal unique, per subscriber, number assigned by the system to the MPM). By requesting to dial the number (e.g. *5544nnn), which is a common feature of practically any regular cellular phone capable of receiving SMS messages, the subscriber can hear the attached voice message.

34. Subscriber B **110-2** dials the system **100** via MSC **120,** and voice interface **151,** to listen to the voice message. The dialed number contains the message reference "nnn", which is the number of the message in the database **154**, for this subscriber.

35. Voice interface **151** requests the MPM voice file by message reference, from the voice database **154.**

36. Voice interface **151** obtains the MPM voice file from voice database **154.**

37. Voice interface **151** plays the voice to subscriber B 110-2 through MSC 120. The subscriber can also manipulate the message (e.g. back, fast-forward, etc.) using DTMF based directions.

After browsing the MPM, the subscriber can further manipulate it through options like: save, delete, reply to subscriber A, transfer to another subscriber with an option to also append his/her own MPM (the appending is done just like the composition of a new MPM).

At any given time, subscriber B can have several MPMs in the inbox of his/her phone, and can re-browse them, and their attachments.

It should be noted that, through the above scenario, it is possible to also browse other types of attachments to the MPM, such as pre-generated business card information, pre-generated voice-clips, Icons or pictures. The possibility to browse certain items (such as pictures) may depend on the capabilities of the cellular phone to display such items.

Figure 3a illustrates an alternative means of retrieving MPMs, by using SMS enabled handsets, as follows:

A subscriber receives a MPM message, by first receiving the SMS part, and can read and manipulate it just like a regular SMS.

31. Application server **153** obtains MPM text data from the main database **155.**

32. Application server **153** sends MPM data SMS-based MPM data to the handset of subscriber B **110-2**, via SMSC **130** and data interface **152**. The MPM data contains a text message and an internal (database) reference denoting the voice part of the MPM.

33. The MPM data part (i.e. the regular SMS) is presented on the mobile station. Within the message there is a textual indication, like "please reply with 'P' to hear voice attachment".

34. Subscriber B **110-2** replies by SMS, and types, for example letter P for "Play".

35. System **100** calls the subscriber B **110-2** via VI **151** and MSC **120** so that the user can listen to the voice message.

36. Voice interface **151** requests the MPM voice file by message ID, from the voice database **154**.

37. Voice interface **151** obtains the MPM voice file from the voice database **154** .

38. Voice interface **151** plays the voice file to subscriber B **110-2** through MSC **120**. The subscriber can also manipulate the message (e.g. back, fast-forward, etc.) using DTMF based directions.

An additional scenario is the retrieving of MPMs using a phone with WML browser or equivalent. This can be enabled according to the following scheme:

In certain WAP versions, such as WAP version 1.1, it is not possible to trigger a WAP session from the system **100** towards the cellular-phone of subscriber B. Therefore,

the process of browsing an MPM in such an environment will be through the scenario described above in figure 3 and in figure 4, which illustrates the retrieval of MPMs, using SIM Toolkit or SMS. Likewise, in the case of a WAP version (or equivalent protocol) that is capable of triggering a WAP session from the system toward the cellular-phone, the scenario is as follows:

1. Subscriber B **110-2** receives the MPM message through a system triggered WAP session (from the WAP Gateway **140**), and is first presented with the SMS text part, and can read and manipulate it just like a regular SMS. There is also a special sign (e.g. Icon) denoting the presence of an attached voice message.
2. When reading the message, the subscriber may request to hear the attached voice message, through choosing the relevant option. If this option is chosen, the WAP session may be disconnected, or suspended, in order to setup a voice session, in case where the WAP protocol does not have the ability to maintain a WAP session (over a circuit switched data channel) and a voice session in parallel. Making voice calls from a WAP session is executed using WTA (defined above).
3. After establishing the voice session, the voice message is played through the phone. When hearing the voice message, the subscriber can also manipulate the message (e.g. back, fast-forward, etc.), using DTMF based directions.
4. At the end of the hearing process, the system again triggers a WAP session, only if the WAP session was previously disconnected or suspended, towards the cellular-phone, and the session is restored to the point of the previous disconnection/suspension.
5. After browsing the MPM, the subscriber can further manipulate it through options like: save, delete, reply to subscriber A **110-1**, transfer to another subscriber, with an option to also append his/her own MPM (the appending is done just like the composition of a new MPM).

Subscriber B can have several MPMs in his/her personal inbox (stored on the server) and can re-browse them and their attachments.

It should be noted that, through the above scenario, it is also possible to browse other types of attachments to the MPM, such as pre-generated business card information, pre-generated voice-clips, Icons or pictures. A cellular-phone with WML (or equivalent)

support can render and present on the screen of the cellular-phone the bitmap of Icons or pictures, provided that these files can be converted by the system to a WBMP representation that is supported by the WML-Browser.

Figure 4 illustrates the depositing of MPMs over SMS enabled handset (without STK), as follows:

41. Subscriber A **110-1** enters a MPM by typing a short message over the cellular phone Keypad, just as he/she would type an SMS message. Upon submitting the message to the system, subscriber A **110-1** also denotes the cellular number of subscriber B **110-2** (optionally, the name of a distribution list containing more than one subscriber, as facilitated by the cellular phone distribution-list mechanism (sometimes referred to as "groups"), or through an external distribution list, kept on the system). Subscriber **110-1** may also enter a special notation that will denote his/her will to attach a voice attachment to the SMS. This notation can, for example, be contained as a prefix or suffix in the SMS text, or can be a prefix to subscriber B's cellular number (or to each subscriber in the group). For example, the user may enter in a notation such as "!X" or any other notation which can be interpreted and used by the system. Based on this notation, the cellular operator gateways (for example the SMSC **130**) are able to route the relevant data via SMS to the system **100**.

42. The SMS is forwarded through SMSC **130** and data interface **152** to application server **153** of system **100**. Application server **153** stores the SMS message in the system main database **155**.

43. Subsequently, a SMS message is sent from the application server **130**, via data interface **152** and SMSC **130**, and is received by subscriber A **110-1**, with text such as "please dial *5544 to record attachment" or "Press Send twice to record"(in which case the cell-phone dials the originator number in the SMS message, which is for example, also *5544).

44. Subscriber A **110-1** calls back to the specified number. By requesting to dial the number (e.g. *5544), which is a common feature of practically any regular cellular phone capable of receiving SMS messages, subscriber A **110-1** creates a voice connection

though MSC **120** to voice interface **151**, and subscriber **110-1** is prompted to record the voice attachment.

45. Alternatively to 43 and 44, the system **100** calls the subscriber A **110-1** in order to make the voice connection. The system now has a voice connection to subscriber A **110-1**, and subscriber **110-1** is prompted to record the voice attachment.

46. Voice session is established between subscriber A 110-1 to voice interface **151** via MSC **120**, and subscriber A 110-1 records the voice message. The voice message is recorded, and stored in voice database **154**. Optionally, the subscriber can review and/or change the voice message using DTMF based directions.

The combined MPM message is then sent by the system to subscriber B **110-2** (or to a group of subscribers), via data interface **152** and SMSC **130**.

It should be noted that, similarly to the above scenario, in addition to the voice attachment (or instead of it), it is possible to attach other types of attachments to the SMS, such as pre-generated business card information, pre-generated voice-clips, Icons or pictures. The pre-generated attachments are kept on the system databases, or any other connectable data storage facilities. In order to select one of them as an attachment, the subscriber has to enter a special notation that will denote his/her will to attach one of the above attachments to the SMS. This notation can, for example, be contained as a prefix or suffix in the SMS text, or can be a prefix to subscriber B cellular number (or to each subscriber in the group). Based on this notation, the cellular operator gateways (for example the SMSC) will be able to route the SMS to the system.

Subsequently to sending the SMS, an SMS (or a plurality of SMSs) is sent from the system and received by subscriber A, with a list of relevant items (i.e. voice-clips, icons or picture or business cards) to attach. Each item is also marked with a code (such as *77nn, where nn is a serial number). By requesting to dial the code or replying to the SMS with the selected code, the subscriber actually signals to the system which item he/she would like to attach. The item will subsequently be attached to the MPM. It is possible to attach more than one attachment.

Figure 5 illustrates the depositing of MPMs over WAP, on Type A handsets:

Note: Type A handsets refer to mobile phones which support WAP protocol version 1.1 or higher or, any equivalent protocol, where, if a telephone number is included in a WML page, the phone does not allow initiation of a voice call to the specified number, using a short sequence of key presses, but rather requires typing the entire number in order to initiate a voice call.

The steps, as can be seen in **Figure 5**, are as follows:

51. Subscriber A **110-1** enters a MPM by typing a short message over the cellular phone Keypad, in a special WML-Browser based screen, such a "deposit" page (which can be obtained by establishing a WAP session), just as he/she would type an SMS message. Additionally the subscriber enters other information relevant to the sending of the SMS, like validity period, reply-option and the cellular number of subscriber B (optionally, the name of a distribution list containing more than one subscriber, as facilitated by the cellular phone distribution-list mechanism (sometimes referred to as "groups"), or through an external distribution list, kept on the system. Such a list may be stored and accessed from pre-configured WML application pages.

52. Subscriber A logs-into system **100** (this needs to be done only if the WAP gateway **140** does not provide means to identify the mobile subscriber).

53. Subscriber A **110-1** sends a text message and destination to application server **153**, via WAP gateway **140** and data interface **152**. Application server **153** stores the text message in the system main database **155**.

54. In addition to entering the above information, there is an option to include an attachment, for example a voice attachment. If this option is chosen, the current WAP session is disconnected or suspended in order to setup a voice session, in case where the WAP protocol does not have the ability to maintain a WAP session (over a circuit switched data channel) and a voice session in parallel. In this case, the system's dial up number is presented as part of the WAP session, within a message like "please dial xxxx to leave the voice message" (where xxxx is the dial up number of the system).

55. The WAP session is ended by subscriber **110-1**.

56. Subscriber A **110-1** manually dials the above displayed number, in order to establish a voice session with the system **100**, via the MSC **120** and voice interface **151**.

57. The subscriber is then prompted to record the voice message, and then press a key to denote the end of the recording. Optionally, the subscriber can review and/or change the voice message using DTMF based directions. Record voice call, which is subsequently stored in voice database **154.**

Following this the combined MPM message is sent by the system to subscriber B **110-2** (or to the group of subscribers).

It should be noted that, similarly to the above scenario, in addition to the voice attachment (or instead of it), it is possible to also attach other types of attachments to the SMS, such as pre-generated business card information, pre-generated voice-clips, Icons or pictures. The pre-generated attachments are pre-configured by a subscriber and kept on the system database. In order to select one of these pre-configured files as an attachment, the subscriber can request to view a list of the above items (which can been obtained through the WAP session). It is also possible to render and present on the screen of the cellular-phone the bitmap of Icons or pictures, provided they can be converted by the system to a WBMP representation that is supported by the WML-Browser. The subscriber can then select one of the items. The item will subsequently be attached to the MPM. It is possible to attach more than one attachment.

Figure 6 illustrates the depositing of MPMs over WAP, on Type B handsets:
Note: Type B handsets refer to mobile phones which support WAP protocol version 1.1 or higher or, any equivalent protocol, wherein, if a telephone number is included in a WML page, the phone allows initiation of a voice call to the specified number, using a short sequence of key presses, and without needing to type the entire number for example, Nokia Type handsets.
The steps, as can be seen in **Figure 6**, are as follows:
61. Subscriber A **110-1** enters a MPM by typing a short message over the cellular phone Keypad, in a special WML-Browser based screen, such a "deposit" page (which can be obtained by establishing a WAP session), just as he/she would type an SMS message. Additionally the subscriber enters other information relevant to the sending of the SMS, like validity period, reply-option and the cellular number of subscriber B (optionally, the

name of a distribution list containing more than one subscriber, as facilitated by the cellular phone distribution-list mechanism (sometimes referred to as "groups"), or through an external distribution list, kept on the system. Such a list may be stored and accessed from pre-configured WML application pages.

62. Subscriber A loges-in to system **100** (this needs to be done only if WAP gateway **140** does not provide means to identify the mobile subscriber).

63. Subscriber A **110-1** sends message text and destination to application server **153**, via WAP gateway **140** and data interface **152**. Application server **153** stores the text message in main database **155**.

64. In addition to entering the above information, there is an option to include an attachment, for example a voice attachment. If this option is chosen, the current WAP session is disconnected or suspended in order to setup a voice session, in case where the WAP protocol does not have the ability to maintain a WAP session (over a circuit switched data channel) and a voice session in parallel. In this case, the system's dial up number will be presented as part of the WAP session, within a message like "please dial xxxx to leave the voice message" (where xxxx is the dial up number of the system).

65. When presented with the above dial up number Subscriber A **110-1**, presses the "call " button on the cellular-phone, and thus automatically ends the WAP session and establishes a voice session with the system **100**, via MSC **120** and VI **151**.

66. The subscriber is then prompted to record the voice message, and then press a key to denote the end of the recording. Optionally, the subscriber can review and/or change the voice message using DTMF based directions. Record voice call, which is subsequently stored in voice database **154**.

The examples shown in **figures 2-6** describe the creation and usage of multipart messages. These multipart messages may be implementation using various types of mobile communications devices, each one according to the specific handset faculties, SIM Toolkits etc.

The above descriptions provided various examples of usage of the present invention. A detailed example of how certain basic operations by users of the present invention is illustrated in **Figure 7**. These include the processes of writing a message to a single

recipient, writing a message to multiple recipients, and reading a message, from the users point of view. These scenarios can be seen in **Figure 7**, where both the graphic user interface of handset screens, and the user operations are described. Part 1 describes a typical notation whereby a series of buttons are pressed in order to execute a function. Part 2 describes the depositing of a MPM, whereby a user accesses the client application from the main phone menu. Part 2a describes an example of a write operation, whereby the target name and number are entered, as is the text message and voice recording. Part 2b describes the writing of multiple MPMs, entailing the choosing of more than one recipient for a message. Part 2c describes the reading procedure for a MPM. In the example provided, after receiving one or more messages to the user's inbox, the text component of a message is read, as is the name and timestamp of the message. The recipient subsequently listens to the voice component of the message, and may then replay, save, erase, reply or forward the message.

Operational details

There are various operational scenarios, which can be implemented in order to achieve the above-described functionality. The first scenarios describe the method of composition of the MPM, and the later scenarios describe the method through which an MPM is received and used. The scenarios differ in regards to the technical capabilities of the cellular phone (e.g. with or without STK). These differences result in a slightly different operation sequence needed to perform the MPM composition or usage.

ADVANTAGES OF THE INVENTION

1. According to the present invention, mobile handset users are able to create messages composed of both voice (or other multimedia forms) and text, or just either one, and send them off to other mobile handset users, which do not need to subscribe to a special service or perform any initiated action, but rather are prompted as the message arrives, and are instructed by the system's screens to retrieve the text and the voice elements of the message quickly and efficiently.

2. The MPM client uses a SIM Toolkit and a SMS bearer in order to create a menu driven user interface, which enables voice deposit and retrieval. The implementation of text and voice operations on a SIM Toolkit allows high functionality on GSM phones that are 2G and not WAP enabled.

3. The present invention enables the integration of voice and data operations on the handset.

4. MPM technology may be deployed on currently existing mobile telephony networks, commonly known as 2G (second generation), and the near future generation of mobile telephony technology (GPRS/EDGE), commonly known as 2.5G (generation 2.5).

ALTERNATE EMBODIMENTS

Several other embodiments are contemplated by the inventors, such as:

1. Multi-Part Voice Messages (hereinafter referred to as MPVM). MPVM is an implementation of MPM, which differs in that it does not include a text message. MPVM is an application that enables management of voice attachment by text menus, with no necessary text elements. As such MPVM is a means to communicate voice messages between mobile phone users, while not going through the standard voice mail systems. The user can use the MPVM client interface on the handset to record a voice message and send it to another user. The client application on the handset does not require the user to enter any typed text. The procedure for executing MPVMs is therefore similar to the above operations for MPMs, except that in MPVM deposit procedure there are no stages for entering text, so the procedure is shorter.

2. Multiple destination MPM/MPVMs are means to create text and/or voice messages on mobile handsets, and then to transmit these messages to a group or groups of recipients. The content of the recipient group may be defined using an Internet client, or directly through the phone menus.

3. Another application of MPM is Post Call MPVM. This is an application where after one subscriber calls a second subscriber, and the second subscriber is not available to answer the call, the caller is routed to the post call MPVM mechanism (instead of the commonplace voicemail). The MPVM is similar to voice mail, except that instead of

being stored in the voice mail server (database), it is stored on the application server of the present system, from where it can be accessed and managed. In this way, no service subscription is required (to define voicemail-box for instance), and more importantly, the message retrieval is done through text menus, which allow the user to access a specific message directly, by it's timestamp and sender identification. In the post call SMSV menu, the user can leave a voice message for the recipient. The advantage over traditional voicemail is that all that is required by the user is a SMS interface – which is available to practically all mobile subscribers today.

The foregoing description of the embodiments of the invention has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. It should be appreciated that many modifications and variations are possible in light of the above teaching. It is intended that the scope of the invention be limited not by this detailed description, but rather by the claims appended hereto.

WHAT IS CLAIMED IS:

1. A system for communicating between wireless communications devices, using multi-part messages (MPM), said system comprising:
i. a voice interface for enabling the transfer of voice between a Mobile Switching Center of a wireless network and an application server;
ii. a data interface for enabling the transfer of data between a Short-Message-Service-Center and said application server;
iii. an application server for enabling communication of the multi-part messages to at least one mobile station;
iv. a voice storage database for storing said voice; and
v. a main database for storing all remaining system data; and
vi a means of communications between said voice interface, said data interface, said application server, said voice storage, and said main database.

2. The system of claim 1, wherein said means of communications comprises at least one means selected from the group consisting of local area network (LAN) and wide area network (WAN).

3. The system of claim 1, further comprising:
vii. a Mobile Switching Center (MSC) for forwarding voice data between said device and a voice interface; and
viii. a SMS Center (SMSC) for forwarding text data between said device and a data interface.

4. The system of claim 1, wherein said application server, said voice storage, said main database, and said means of communications have a distributed configuration.

5. The system of claim 1, wherein at least one of said application server, said storage database, said voice storage database, and said main database, said means of communications have a redundant configuration.

6. The system of claim 4, wherein said distributed configuration comprises a number of systems located in different geographical areas.

7. The system of claim 5, wherein said redundant configuration is a system where each of said application server, said main database, said voice storage database, said means of communications can be replaced in case of failure.

8. The system of claim 1, further comprising a wireless gateway, for transferring Internet-based data between said mobile station and said data interface.

9. The system of claim 8 wherein said wireless gateway comprises at least one gateway selected from the group consisting of WML gateway, XML gateway, HTML gateway, CHTML gateway.

10. The system of claim 1, wherein said voice interface is a multimedia interface that transfers multimedia data between a Mobile Switching Center and an application server.

11. The system of claim 1, wherein said mobile station enables composing the MPMs using software selected form the group consisting of text-menus, IVR, Dual-Tone Multi-Frequency (DTMF) and WAP-based menus.

12. The system of claim 1, wherein said mobile station is SMS-enabled.

13. The system of claim 1, wherein said mobile station further comprises at least one software mechanism selected from the group consisting of a SIM toolkit (STK), WML-enabled browser, HTML enabled browser, XML enabled browser and CHTML enabled browser.

14. The system of claim 1, wherein said mobile station is a plurality of mobile stations.

15. The system of claim 1, wherein said application server comprises a software mechanism for controlling functions of said Voice Interface, said Data Interface, said voice database and said main database, such that composition, storage and management of multi-part messages is enabled.

16. A system for communicating between wireless communication devices using voice messaging, comprising:
i. a voice interface for enabling the transfer of voice data between a Mobile Switching Center and an application server;
ii. a data interface for enabling the transfer of text data between a Short-Message-Service-Center and said application server;
iii. an application server for enabling communication of the multi-part messages to at least one mobile station; and
iv. a voice storage database for storing said voice data.

17. A method for depositing multi-part messages from a wireless communications device with a SIM toolkit (STK), comprising:
i. entering a MPM by typing a text message over the wireless communications device Keypad, in a STK based screen;
ii. transferring said text message through a SMSC to a data interface;
iii. storing said text data in a main database;
iv. establishing a voice session between a subscriber's wireless communications device, an MSC and a voice interface, to facilitate recording of a voice message; and
v. recording said voice message, and storing said voice message in a voice database.

18. The method of claim 17, wherein said entering text message comprises entering at least a destination address.

19. The method of claim 18, wherein said destination address is selected from the group consisting of telephone number, e-mail address, telephone number including constant prefix.

20. The method of claim 17, wherein said establishing a voice session comprises dialing a number.

21. The method of claim 20, wherein said number is selected from the group consisting of a predetermined numbers and numbers provided by said system.

22. The method of claim 20, wherein said dialing is selected from the group consisting of manual dialing and automatic dialing.

23. The method of claim 20, wherein said establishing of a voice session comprises sending a short message to said system to initiate said voice session.

24. The method of claim 20, wherein said establishing of a voice session is initiated by the system.

25. A method for retrieving a MPM using a STK enabled cellular telephone, comprising the steps of:
i. receiving a SMS part of a MPM message;
ii. requesting to hear an attached voice file to said SMS message;
iii. establishing a voice session with a voice interface, via a MSC, to listen to said voice file;
iv. requesting said MPM voice file name from a main database;
v. obtaining content of said MPM voice file from a voice databases; and
vi. playing said voice file over said voice session.

26. The method of claim 25, wherein said SMS part comprises an internal message identity.

27. The method of claim 25, wherein said establishing a voice session comprises dialing a number, said number selected from the group consisting of predetermined numbers, and numbers provided by said system.

28. The method of claim 27, wherein said dialing is selected from the group consisting of manual dialing and automatic dialing.

29. The method of claim 25, wherein said establishing a voice session comprises sending a short message to said system to initiate said voice session.

30. A method for retrieving a multi-part messages using a SMS-enabled mobile communications device, comprising the steps of:
i. receiving a SMS part of a MPM message;
ii. establishing a voice session with a voice interface, via a MSC, to listen to said voice file;
iii. requesting MPM voice file name from a main database;
iv. obtaining content of said MPM voice file from a voice databases; and
v. playing said voice file over said voice session.

31. The method of claim 30, wherein said SMS part comprises an internal message identity.

32. The method of claim 30, wherein said establishing a voice session comprises dialing a number, said number selected from the group consisting of predetermined numbers, and numbers provided by said system.

33. The method of claim 30, wherein said dialing is selected from the group consisting of manual dialing and automatic dialing.

34. The method of claim 30, wherein said establishing of a voice session comprises sending a short message to said system to initiate said voice session.

35. A method for depositing a MPM using a SMS-enabled mobile communications device, comprising the steps of:
i. entering a MPM by typing a short text message using a cellular phone Keypad;
ii. assigning as well the destination number of a subscriber;
iii. entering a special notation that denotes a subscribers will to attach a voice attachment to the SMS;
iv. transferring said text message through a SMSC to a data interface;
v. storing said text data in a main database;
vi. establishing a voice session between a subscriber's wireless communications device and a MSC and a voice interface, to facilitate recording of a voice message; and
vii. recording said voice message, and storing said voice part in a voice database;

36. The method of claim 35, wherein said establishing of a voice session comprises dialing a number, said number selected from the group consisting of predetermined numbers, and numbers provided by said system.

37. The method of claim 36, wherein said dialing is selected from the group consisting of manual dialing and automatic dialing.

38. The method of claim 35, wherein said establishing of a voice session comprises sending a short message to the system to initiate said voice session.

39. The method of claim 35, wherein said establishing of a voice session is initiated by said system.

40. The method of claim 35, wherein said destination number is at least one selected from the group consisting of telephone number, e-mail address, and telephone number including constant prefix.

41. A method for retrieving a MPM using a mobile communications device with navigation software, comprising the steps:
i. receiving a MPM message through a system triggered data session, such that said MPM message is first presented with the text part and a sign indicating an attached voice message;
ii. requesting to hear said attached voice message;
iii. establishing a voice session, and playing said voice message through the device; and
iv. re-triggering a data session towards the communications device;

42. The method of claim 41, wherein said navigation software is selected from the group consisting of WML, CHTML, HTML and XML.

43. The method of claim 41, wherein said navigation software comprises an Internet browser.

44. A method for depositing a MPM using a WAP enabled cellular phone, comprising the steps of:
i. connecting to a wireless gateway and entering a MPM by typing a short text message over the cellular phone Keypad, in a navigation software based screen;
iii. posting text, and destination through a said wireless gateway to a data interface;
iv. storing said text data in a main database;
v. receiving a navigation page containing a phone number to call back in order to deposit a voice message.
vi. establishing a voice session between a subscriber's wireless communications device and a MSC and a voice interface, to facilitate recording of a voice message, by manually entering said phone number; and
vii. recording said voice part, and storing said voice message in a voice database;

45. The method of claim 44, wherein said wireless gateway is at least one gateway selected from the group consisting of WAP gateway, HTML gateway, XML gateway, CHTML gateway.

46. The method of claim 44, wherein said short text message comprises at least destination address.

47. The method of claim 46, wherein said destination address is selected from the group consisting of telephone number, e-mail address, and telephone number including a

constant prefix.

48. The method of claim 44, wherein said navigation software is selected from the group consisting of WML, CHTML, HTML, and XML.

49. The method of claim 44, wherein said navigation software comprises an Internet browser.

50. A method for depositing a multi-part message using a WAP enabled cellular phone, comprising the steps of:
i. connecting to a wireless gateway, and entering a MPM by typing a short text message over the cellular phone keypad, in a navigation software based screen;
iii. posting text, and destination through a said wireless gateway to a data interface;
iv. storing said text message in a main database;
v. receiving a navigation page containing a phone number to call back in order to deposit a voice message.
vi. establishing a voice session between a subscriber's wireless communications device and a MSC and a voice interface, to facilitate recording of a voice message, by activating dial sequence; and
vii. recording said voice message, and storing said voice part in a voice database;

51. The method of claim 50, wherein said navigation software is selected from the group consisting of WML, CHTML, HTML, and XML.

52. The method of claim 50, wherein said navigation software comprises an Internet browser.

53. The method of claim 50, wherein said wireless gateway is a gateway selected from the group consisting of WAP gateway, HTML gateway, and XML gateway.

54. The method of claim 50, wherein said short text message comprises at least a destination address.

55. The method of claim 54, wherein said destination address is selected from the group consisting of telephone number, e-mail address, and telephone number including a constant prefix.

56. The method of claim 50, wherein said activating dial sequences requires a single keystroke, said dial sequences comprising automatically dialing a given number.

57. A method for depositing multi-part voice messages (MPVM) from a wireless communication device comprising:
i. entering a textual message using said communication device text input interface;
ii. transferring said message from a SMSC to a data interface;
iii. storing said text data in a main database;
iv. establishing a voice session between a subscriber's wireless communications device and a MSC, to facilitate recording of a voice message;
v. recording said voice message;
vi. storing said voice message in a voice database.

58. The method of claim 57, wherein said text input interface is a keypad.

59. The method of claim 58, wherein said text input method is a touch-sensitive screen.

60. The method of claim 58 wherein said text message comprises a destination address.

61. The method of claim 60, wherein said destination address is selected from the group consisting of telephone number, e-mail address, and telephone number including a constant prefix.

62. The method of claim 57, wherein said establishing a voice session comprises dialing a number, said number selected from the group consisting of predetermined numbers, and numbers provided by said system.

63. The method of claim 62, wherein said dialing is selected from the group consisting of manual dialing and automatic dialing.

64. The method of claim 57, wherein said establishing of a voice session comprises sending a short message to the system, to initiate said voice session.

65. The method of claim 64, wherein said establishing of a voice session is initiated by said system.

66. The method of claim 60 wherein said wireless communication device is selected from the group consisting of:
i. cellular phone with a SIM toolkit;
ii. WML enabled cellular phone;
iii. SMS enabled cellular phone; and
iv. cellular phone with navigation software.

67. The method of claim 57, wherein said navigation software is selected from the group consisting of WML, CHTML, HTML, and XML.

68. The method of claim 67, wherein said navigation software comprises an Internet browser.

69. The method of claim 67, further comprising the ability of executing post call multi part voice message to wireless communication devices.

70. The method of claim 69, wherein said executing post call multi part voice message to wireless communication device, comprises the steps of:

i. calling a wireless telephone subscriber;

ii. in case where said subscriber is not available, routing caller to a post-call multi-part; voice message (MPVM) mechanism; and

iii. storing said message on an application server.

71. A computer program product for depositing a multi-part-message, the computer program product comprising:

i. computer generated code for enabling a computer system to perform predetermined operations selected from the group of operations consisting of:

a. storing received text data on a main database;

b. establishing a voice connection between a wireless communication device and a Mobile Switching Center;

c. recording voice data;

d. storing said voice data on a voice storage device; and

ii. a computer readable medium bearing instructions for said computer generated code.

72. A computer program product for retrieval of a multi-part-message, the computer program product comprising:

i. software instructions for enabling a computer system to perform predetermined operations; said predetermined operations comprising:

a. obtaining a text message from a main database, according to an internal message identity;

b. sending a text message based on said text data to a wireless communication device;

c. establishing a voice connection between said wireless communication device and a Mobile Switching Center; and

d. playing voice data through a voice connection; and

ii. a computer readable medium for bearing said software instructions.

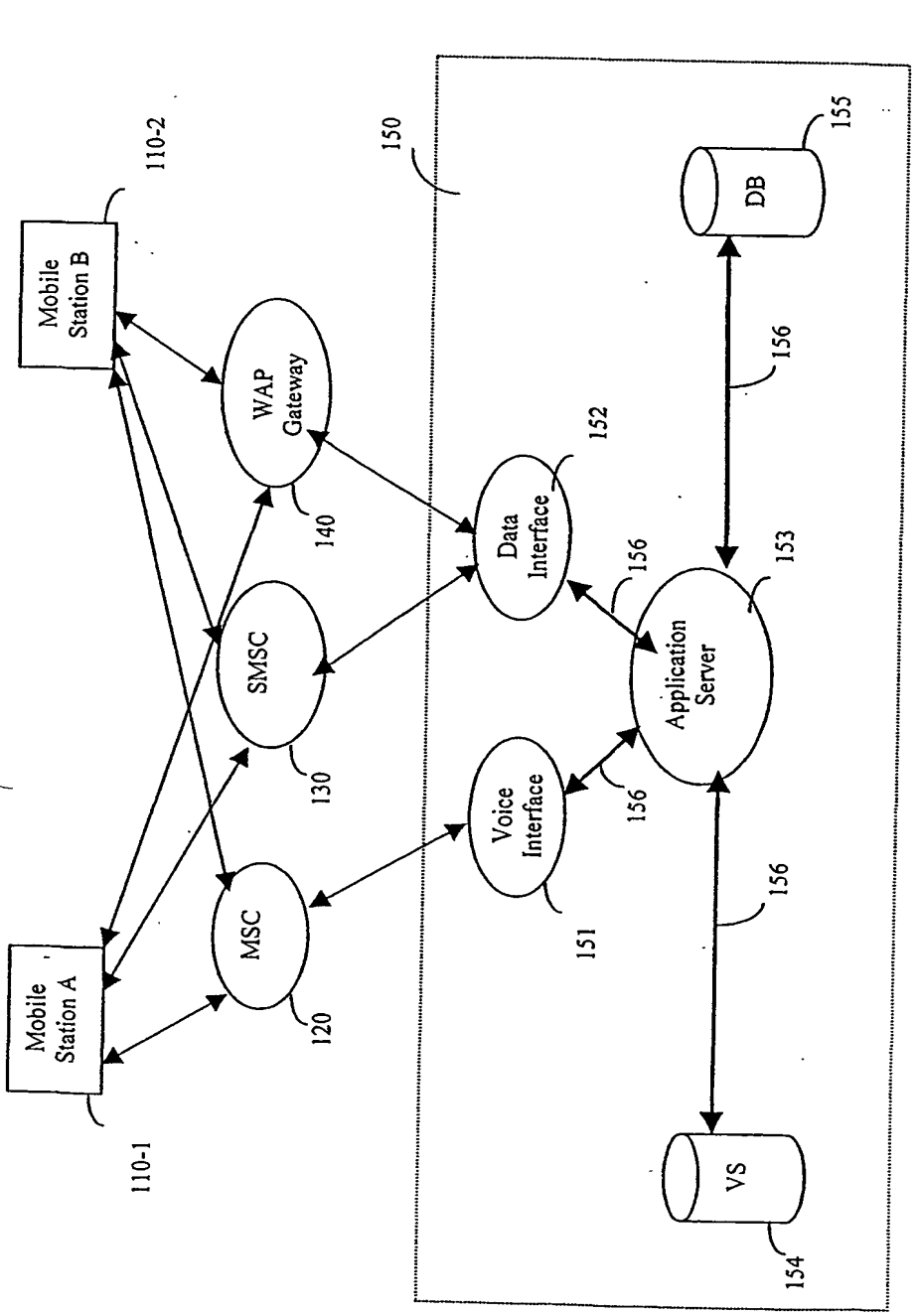

100
110-2
Mobile Station B
WAP Gateway
140
150
DB
155
156
152
Data Interface
156
153
Application Server
SMSC
130
Voice Interface
156
151
MSC
120
156
Mobile Station A
110-1
VS
154

Figure 1

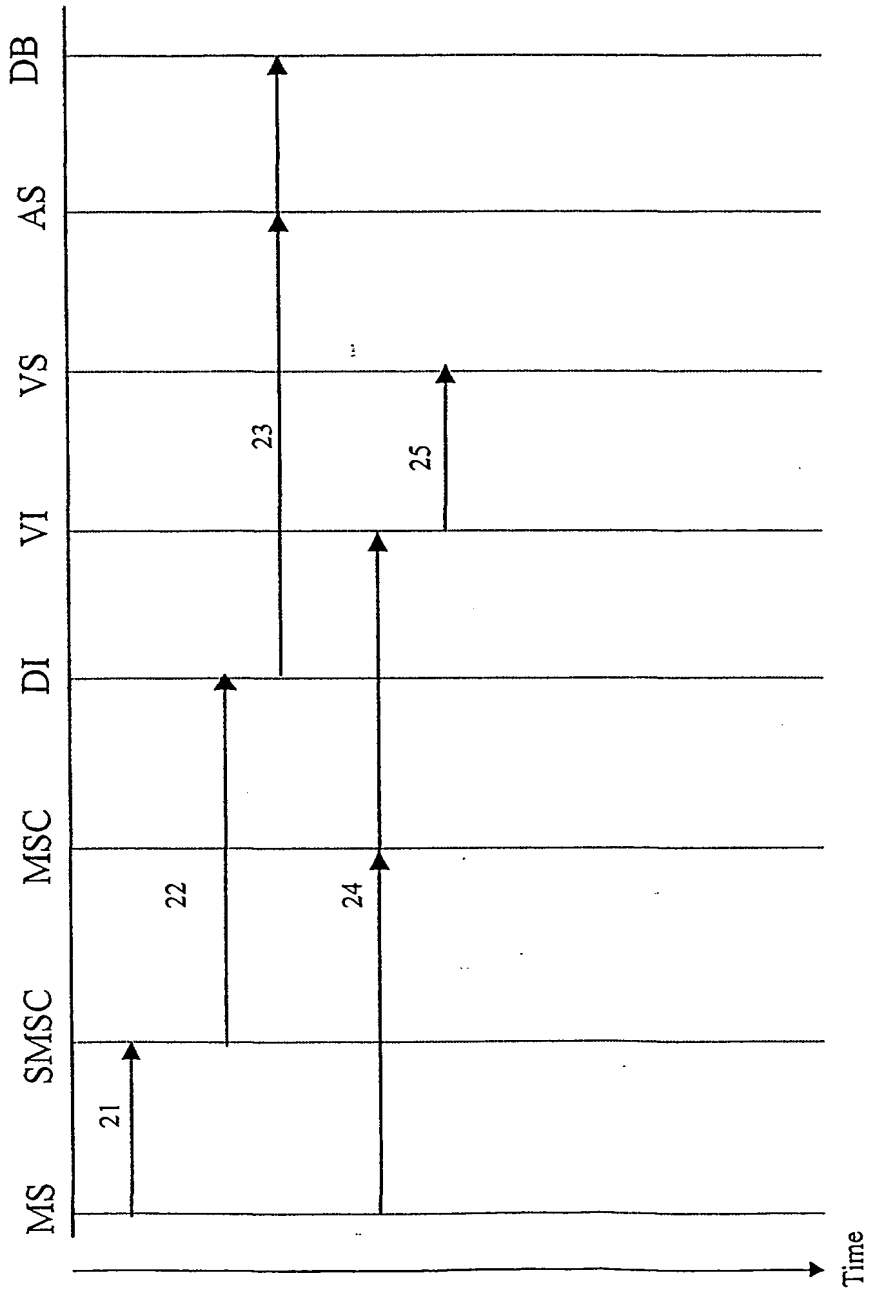


Figure 2

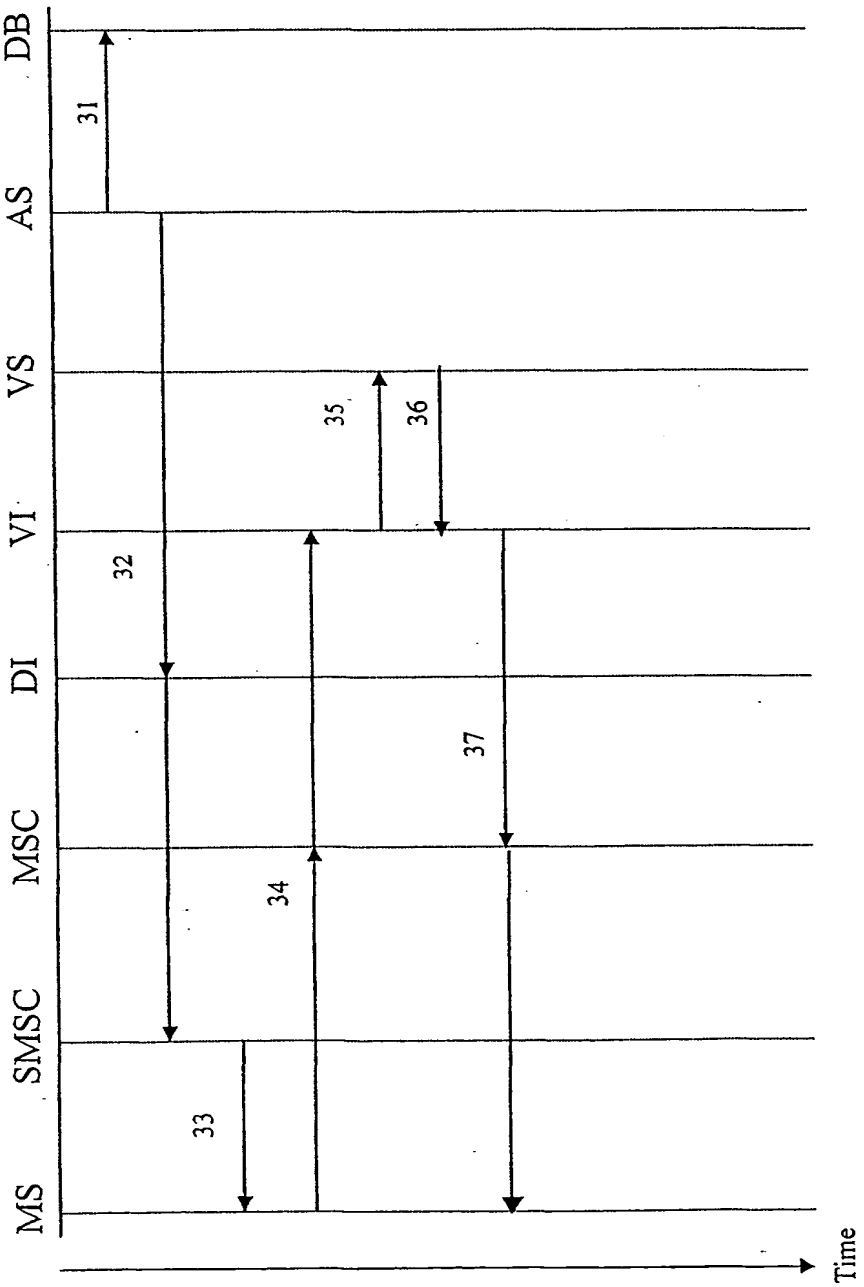


Figure 3

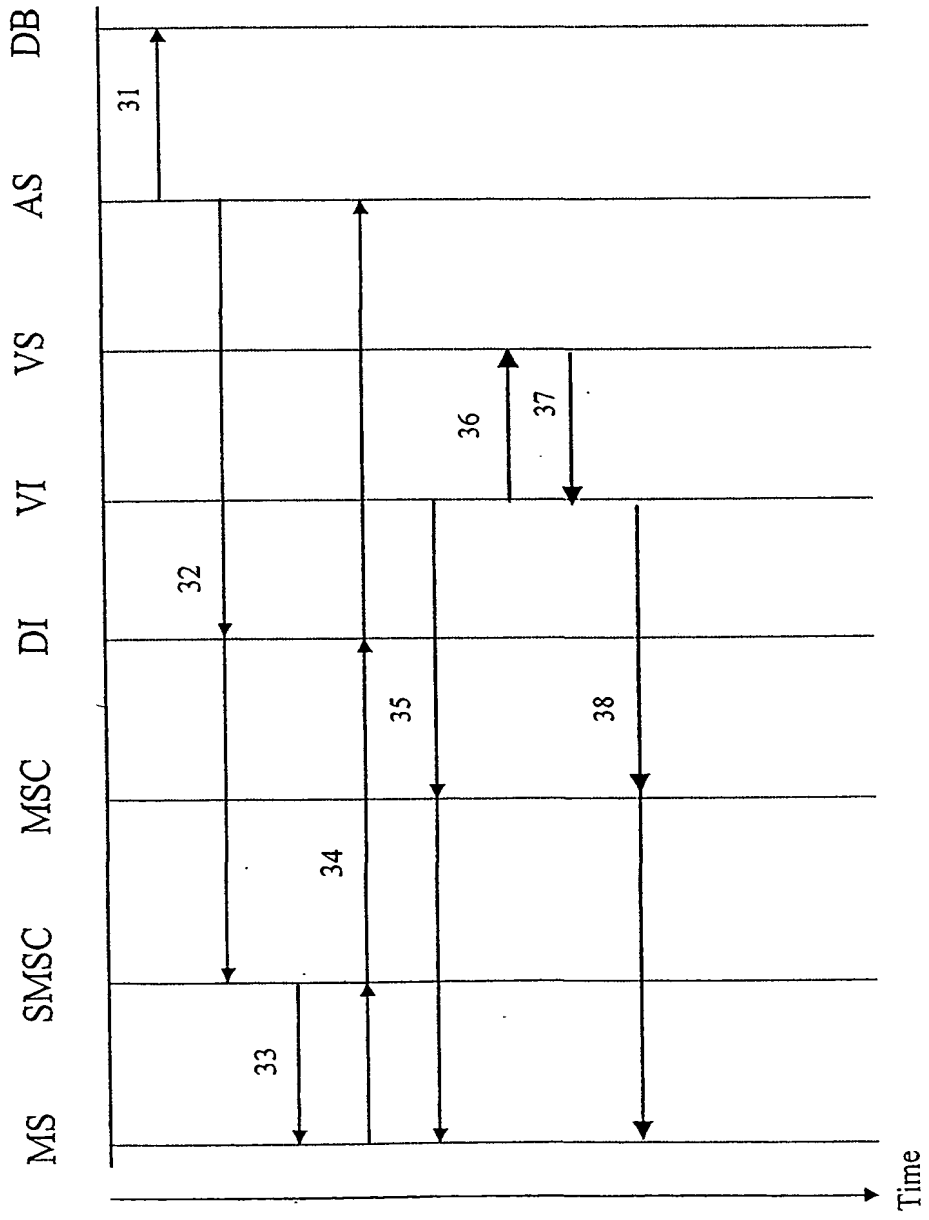


Figure 3a

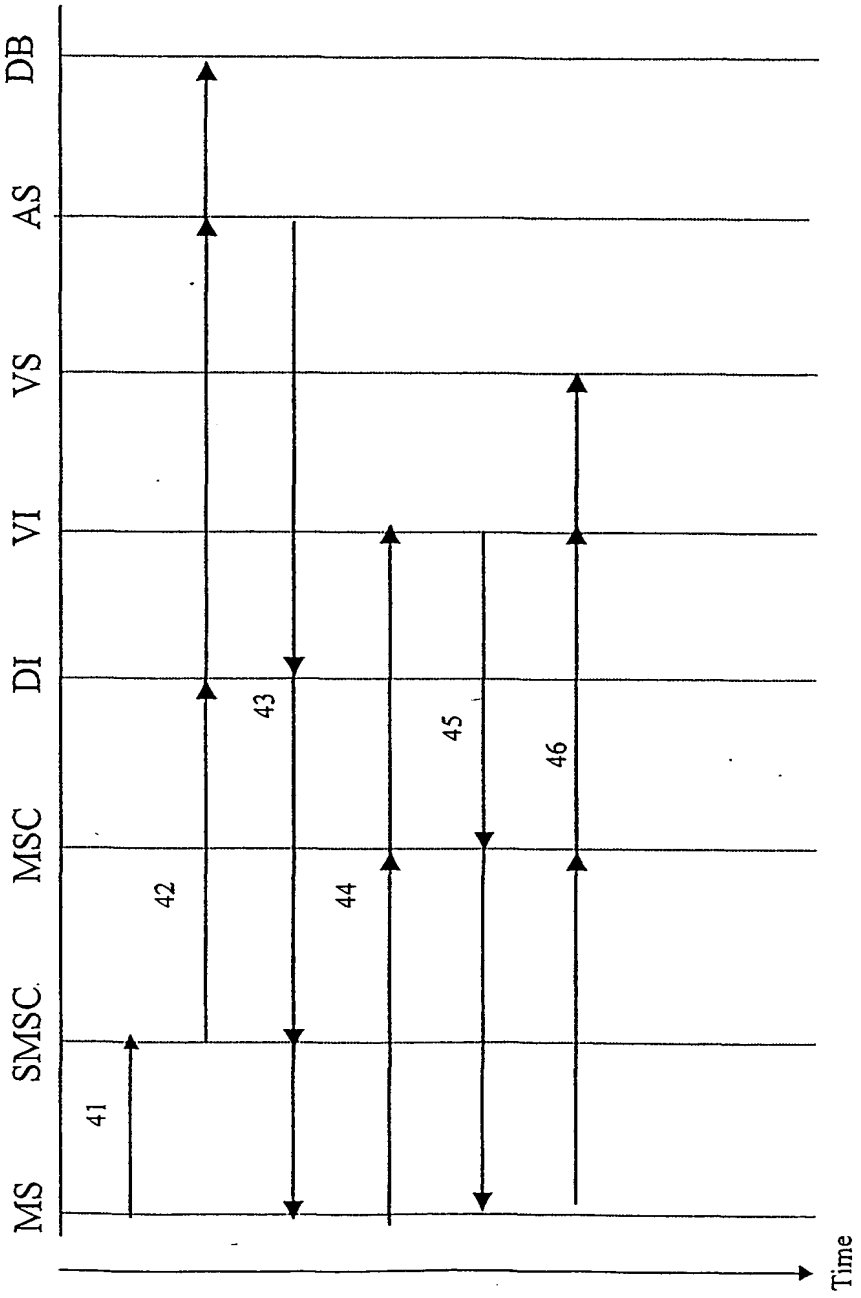


Figure 4

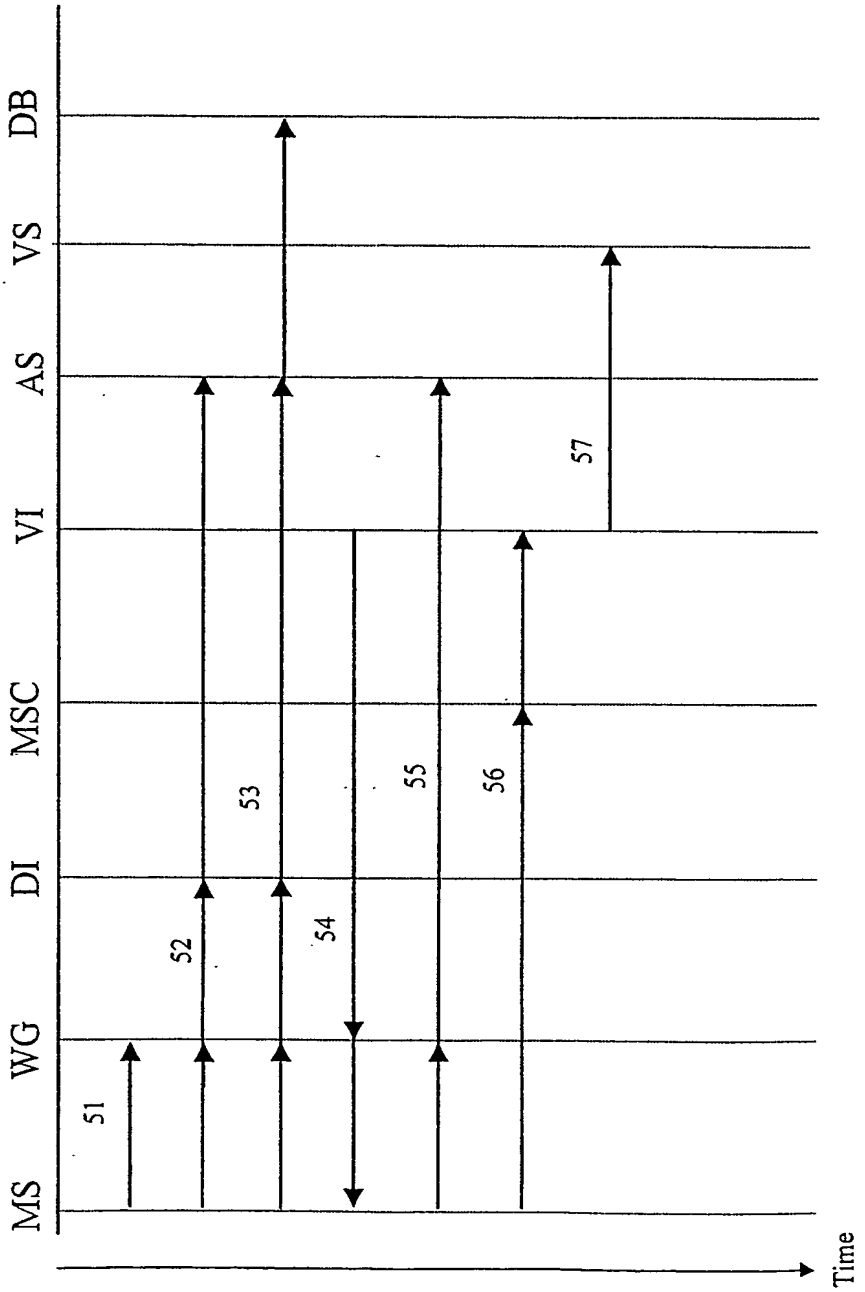


Figure 5

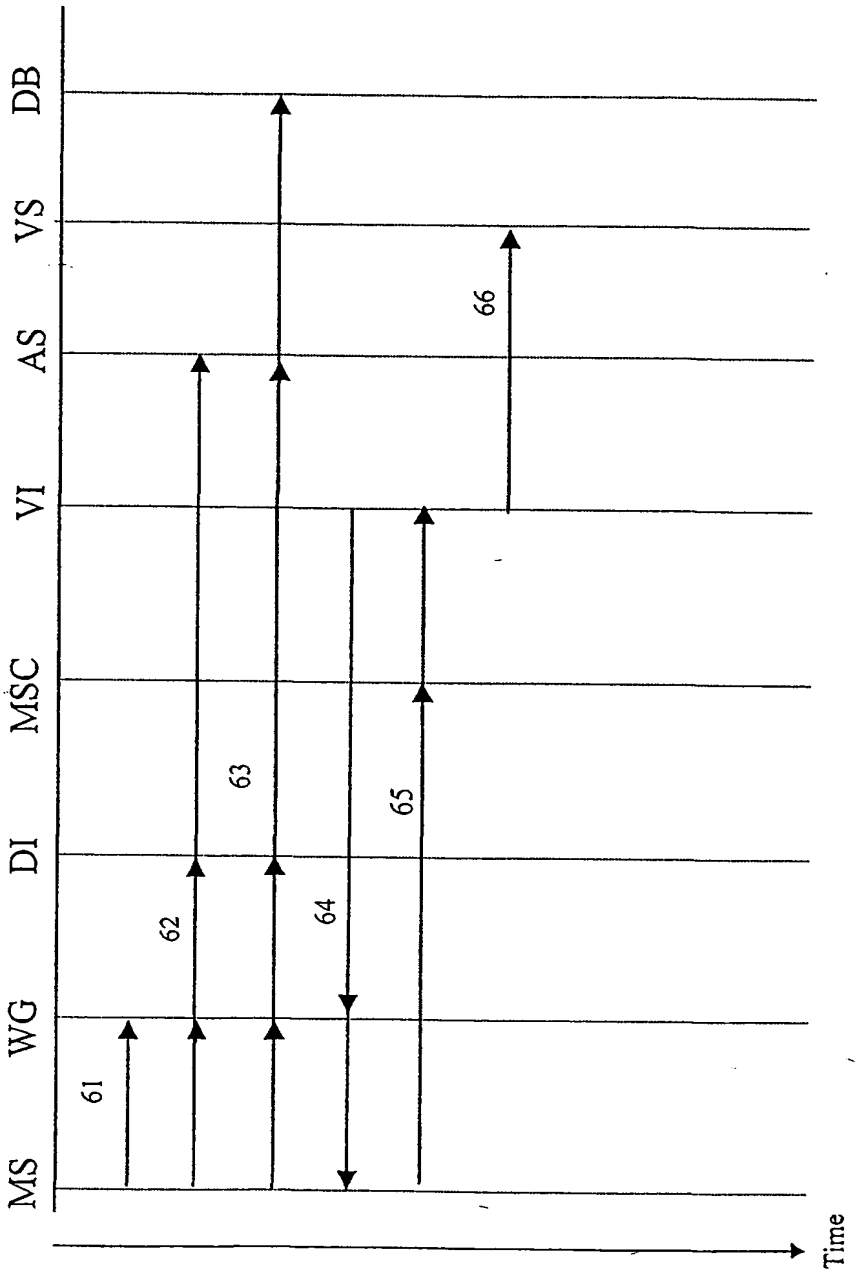
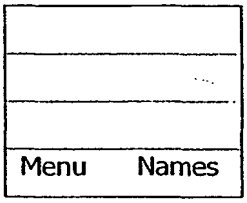


Figure 6

FIGURE 7:

1. Notation

i) Cell phone screen



ii) User operations (buttons pressed)

<MENU>

<OK>

<SEND>

<END>

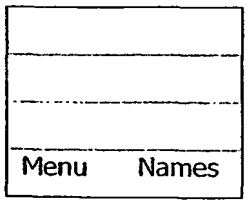
<UP>

<DOWN>

<A>, <B>, <C>... <1>, <2>, <3>...

2. MPM

Below we see how the user can access the client application from the main phone menu.



<MENU>

(This is the phone's main menu)

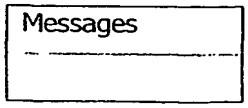
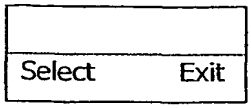
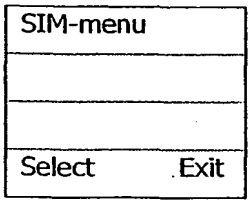


Fig. 7 (continued)



<UP>

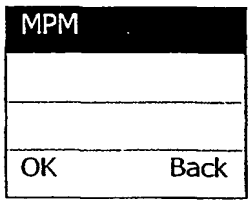
(Messages is the first entry in the main menu)



<SELECT>

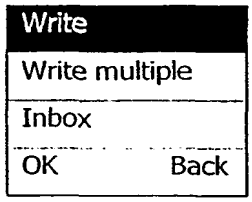
(SIM-menu is the main menu of the SIM Toolkit applications)

Fig. 7 (continued)



<OK>

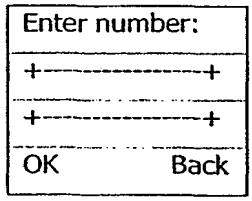
(MPM is the SMS+voice application)



<OK>

(These are the options available for SMSX)

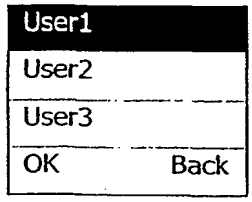
a. Write



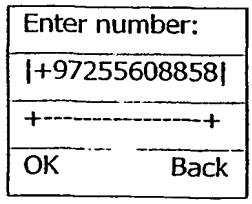
<+><1><2>...

(- Enter recipient's phone number directly, or:

<OK> - go to address book)

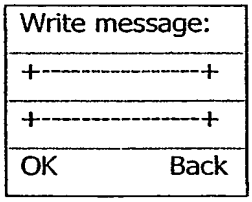


<OK> (Select recipient from address book)



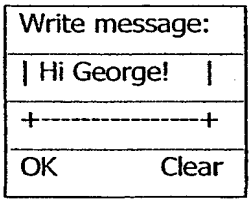
<OK> (Confirm number)

Fig. 7 (continued)

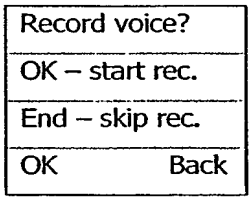


<H><I>< ><G><E><O><R><G><E><!>

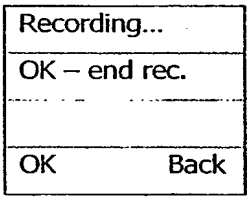
(Type text part of message)



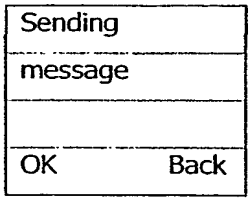
<OK> (Text part of message completed)



<OK> (Sound internal beep when recording starts)



<OK> (recording ends after pressing OK)



. . .

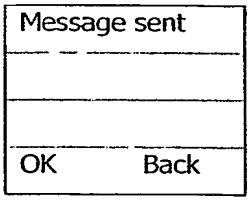


Fig. 7 (continued)

b. Write multiple

Enter number:
+----------
+----------
OK Back

<+><1><2>...

(- Enter recipient's phone number directly, or:

<OK> - go to address book)

User1
User2
User3
OK Back

<OK> (Select recipient from address book)

Enter number:
|+97255608858|
+----------
OK Back

<OK> (Confirm number)

Send
Add recipients
OK Back

<OK> (Choose to add new recipients or continue)

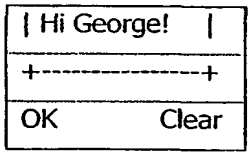
Write message:
+----------
+----------
OK Back

<H><I>< ><G><E><O><R><G><E><!>

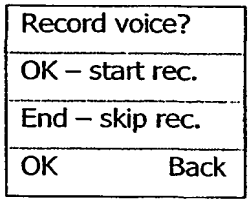
(Type text part of message)

Write message:

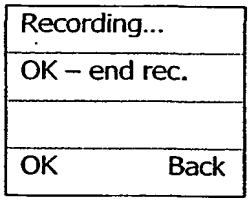
Fig. 7 (continued)



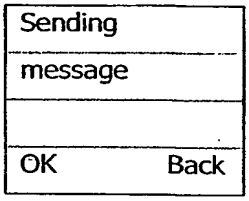
<OK> (Text part of message completed)



<OK> (Sound internal beep when recording starts)

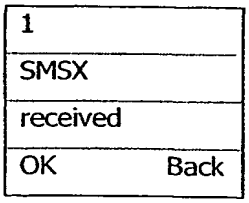


<OK> (recording ends after pressing OK)



c. Read

Either from the above menu, or the following screen pops up:



<OK>

(Sound external beep when message is received)

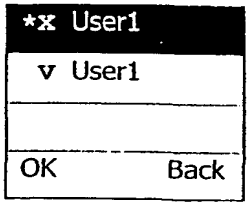


Fig. 7 (continued)

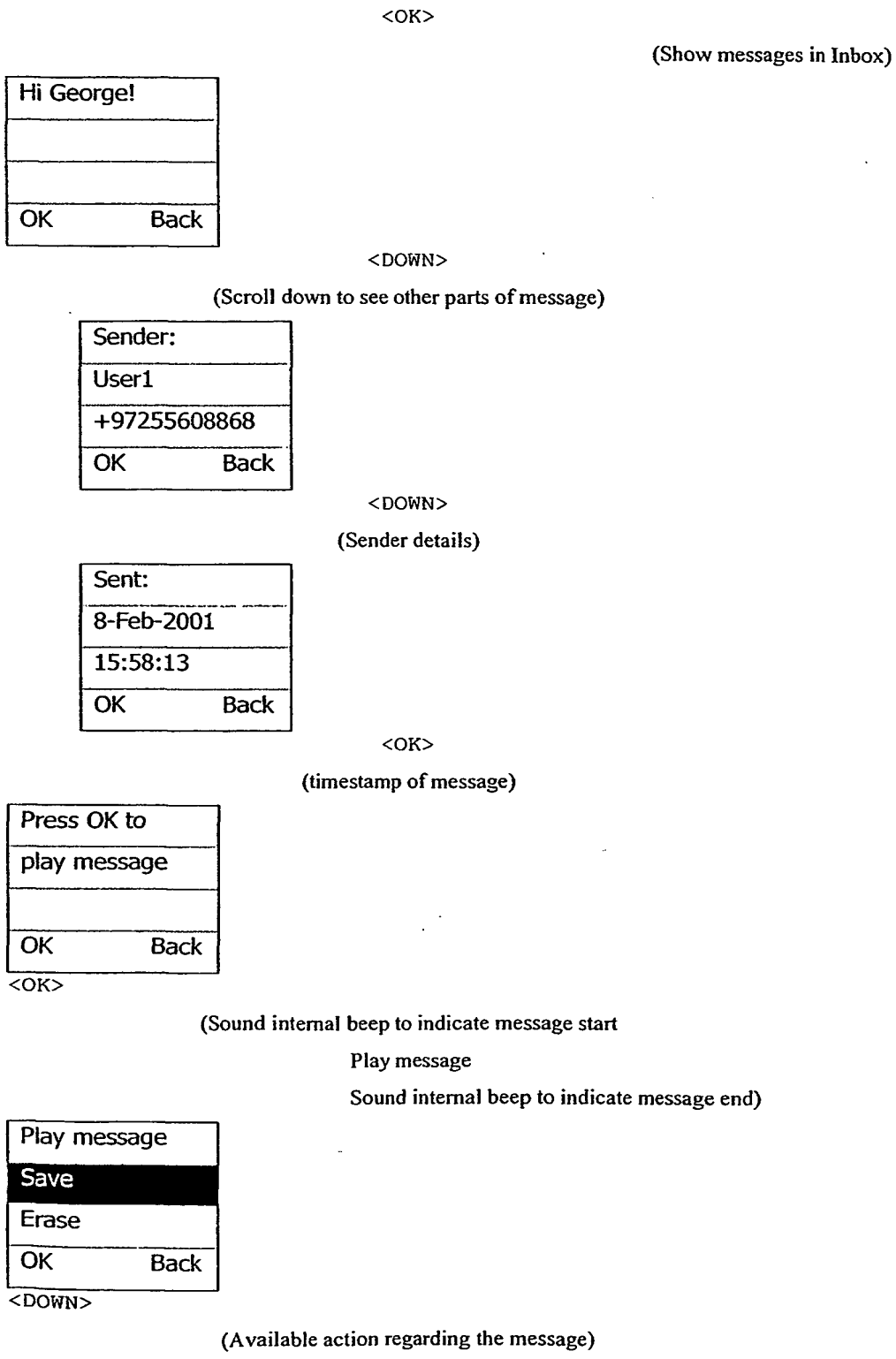
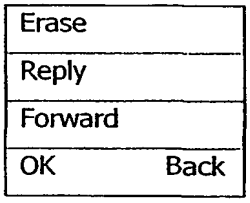


Fig. 7 (continued)



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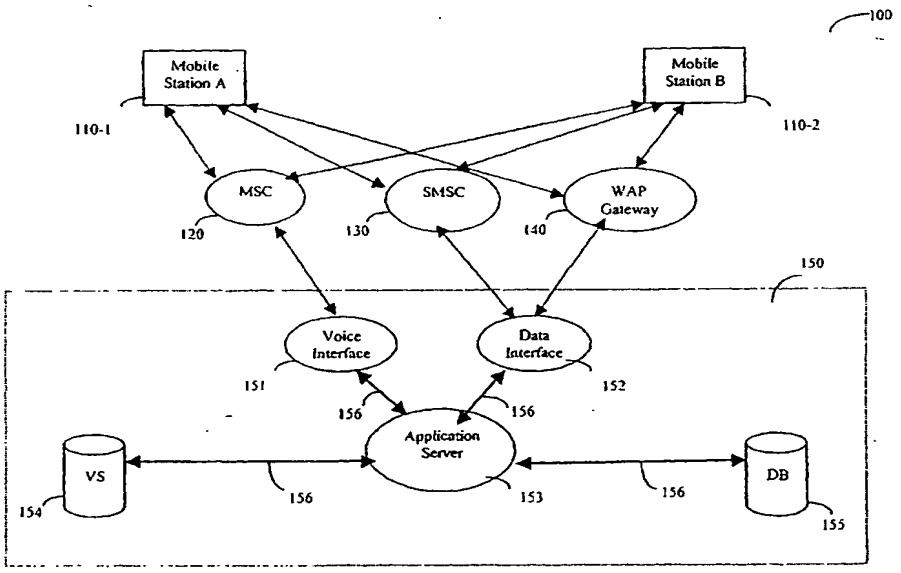
Published:
— *with international search report*

[Continued on next page]

(54) Title: A METHOD AND SYSTEM FOR HANDLING MULTI-PART MESSAGES BY USERS OF CELLULAR PHONES



(57) Abstract: A system and method (100) for enabling mobile handset users (110-1) to create and manage messages composed of both text and multimedia attachment, and communicate these messages to other mobile handset users (110-2) using existing handsets and wireless architecture. According to the present invention (150), short Message Service SMS messages together with voice attachments, or other type of attachments, are composed, communicated, monitored and managed. These attachments may be, for example, bit-map icons, vocal tones, audio and video clips, business card information and any other data attachments. Through this attachment method, a multi-part message MPM is created.

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8 May 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL01/01166

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :H04J 3/00, 3/02, 3/24; H04M 1/64; H04Q 11/04

US CL :Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,119,167 A (BOYLE et al) 12 September 2000, col. 3 lines 26-39, col. 5 line 66 to col. 6 line 9, col. 6 lines 41-48, col. 10 lines 13-26, col. 10 lines 55-65, col. 15 lines 40-48, col. 26 lines 12-17, and Fig. 1.	1-72
Y	US 6,055,441 A (WIEAND et al) 25 April 2000, col. 3 lines 34-50, and col. 10 lines 42-54,	1-72
Y	US 6,097,967 A (HUBBE et al) 01 Auguest 2000, col. 7 lines 17-39 and Fig. 4.	1-72
A,P	US 2001/0008554 A (FINNIGAN) 19 July 2001, see entire document.	1-72

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search	Date of mailing of the international search report
18 JULY 2002	16 DEC 2002
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer Douglas Olms
Facsimile No. (703) 305-3230	Telephone No. (703) 305-4703

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL01/01166

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US 6,181,780 B1 (FINNIGAN) 30 January 2001, see entire document.	1-72
A,P	US 6,308,070 B1 (LASTER) 23 October 2001, see entire document.	1-72
A	US 5,794,039 A (GUCK) 11 August 1998, see entire document.	1-72
A	US 5,684,862 A (FINNIGAN) 04 November 1997, see entire document.	1-72

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL01/01166

A. CLASSIFICATION OF SUBJECT MATTER:
US CL :

370/259, 265, 271, 310, 336, 338, 345; 379/67.1, 68, 88.13, 88.16, 88.17, 88.18, 88.22, 88.25, 88.26, 88.27; 455/422, 550, 556, 557, 575; 709/201, 203, 219

B. FIELDS SEARCHED
Minimum documentation searched
Classification System: U.S.

370/259, 265, 271, 310, 336, 338, 345; 379/67.1, 68, 88.13, 88.16, 88.17, 88.18, 88.22, 88.25, 88.26, 88.27; 455/422, 550, 556, 557, 575; 709/201, 203, 219

B. FIELDS SEARCHED
Electronic data bases consulted (Name of data base and where practicable terms used):

EAST
search terms: multi-part messages, voice interface, mobile switching center, application server, data interface, short message service center, mobile station voice storage database, LAN, WAN, main database, distributed configuration, redundant configuration, Internet, WML, XML, HTML, CHTML gateway, text-menus, IVR, DTMF, WAP-based menus, SIM toolkit, STK, telephone number, e-mail address, prefix, keypad, navigation page, software instructions, computer readable instructions.